

ABSTRACT

A system for providing high connectivity communications over a packet-switched optical ring network comprises a core optical ring having at least one node, the node being coupled to a subtending system by an optical crossbar switch, a source for generating a set of packets, a stacker for forming a first composite packet from the set of serial packets, the stacker coupled to the optical crossbar switch, and the stacker further coupled to the source for generating the set of packets, the first composite packet being parallel packets in a single photonic time slot, the first composite packet to be added to the core optical ring in a vacant photonic time slot via the optical crossbar switch, a second composite packet propagating on the core optical ring destined to be dropped at the node for further distribution on the subtending system via the optical crossbar switch, an unstacker for serializing the second composite packet dropped at the node, the unstacker coupled to the optical crossbar switch and a detector for distributing the serialized packets to a further destination by the subtending system. The source for generating the set of packets may be generated, for example, serially by a tunable laser or may be generated, for example, in parallel by an array of lasers.

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